

What Is Claimed:

1. An isolated nucleic acid molecule comprising a nucleotide sequence which
- 5 (i) encodes a protein or polypeptide comprising an amino acid sequence of SEQ. ID. No. 3, SEQ. ID. No. 5, SEQ. ID. No. 7, SEQ. ID. No. 9, SEQ. ID. No. 11, SEQ. ID. No. 13, SEQ. ID. No. 15, SEQ. ID. No. 17, SEQ. ID. No. 20, SEQ. ID. No. 22, SEQ. ID. No. 24, SEQ. ID. No. 26, SEQ. ID. No. 28, SEQ. ID. No. 30, SEQ. ID. No. 32, SEQ. ID. No. 34, SEQ. ID. No. 36, SEQ. ID. No. 38, SEQ. ID. No. 40, SEQ. ID. No. 42, SEQ. ID. No. 44, SEQ. ID. No. 46, SEQ. ID. No. 48, SEQ. ID. No. 50, SEQ. ID. No. 52, SEQ. ID. No. 54, SEQ. ID. No. 56, SEQ. ID. No. 58, SEQ. ID. No. 60, SEQ. ID. No. 62, SEQ. ID. No. 64, or SEQ. ID. No. 66; or
- 10 (ii) hybridizes, under stringency conditions comprising a hybridization medium which includes 0.9M SSC at a temperature of 37°C, to a DNA molecule comprising a nucleic acid sequence complementary to SEQ. ID. No. 2, SEQ. ID. No. 4, SEQ. ID. No. 6, SEQ. ID. No. 8, SEQ. ID. No. 10, SEQ. ID. No. 12, SEQ. ID. No. 14, SEQ. ID. No. 16, SEQ. ID. No. 19, SEQ. ID. No. 21, SEQ. ID. No. 23, SEQ. ID. No. 25, SEQ. ID. No. 27, SEQ. ID. No. 29, SEQ. ID. No. 31, SEQ. ID. No. 33, SEQ. ID. No. 35, SEQ. ID. No. 37, SEQ. ID. No. 39, SEQ. ID. No. 41, SEQ. ID. No. 43, SEQ. ID. No. 45, SEQ. ID. No. 47, SEQ. ID. No. 49, SEQ. ID. No. 51, SEQ. ID. No. 53, SEQ. ID. No. 55, SEQ. ID. No. 57, SEQ. ID. No. 59, SEQ. ID. No. 61, SEQ. ID. No. 63, or SEQ. ID. No. 65; or
- 15 (iii) comprises a nucleotide sequence which is complementary to the nucleic acid molecules of (i) and (ii).
- 20
- 25
2. The nucleic acid molecule according to claim 1, wherein the nucleic acid molecule encodes a protein or polypeptide comprising an amino acid sequence of SEQ. ID. No. 3, SEQ. ID. No. 5, SEQ. ID. No. 7, SEQ. ID. No. 9, SEQ. ID. No. 11, SEQ. ID. No. 13, SEQ. ID. No. 15, SEQ. ID. No. 17, SEQ. ID. No. 20, SEQ. ID. No. 22, SEQ. ID. No. 24, SEQ. ID. No. 26, SEQ. ID. No. 28, SEQ. ID. No. 30, SEQ. ID. No. 32, SEQ. ID. No. 34, SEQ. ID. No. 36, SEQ. ID. No. 38, SEQ. ID. No. 40, SEQ. ID. No. 42, SEQ. ID. No. 44, SEQ. ID. No. 46, SEQ. ID. No. 48,
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SEQ. ID. No. 50, SEQ. ID. No. 52, SEQ. ID. No. 54, SEQ. ID. No. 56, SEQ. ID. No. 58, SEQ. ID. No. 60, SEQ. ID. No. 62, SEQ. ID. No. 64, or SEQ. ID. No. 66.

3. The nucleic acid molecule according to claim 2, wherein the
5 nucleic acid molecule comprises a nucleotide sequence according to SEQ. ID. No. 2, SEQ. ID. No. 4, SEQ. ID. No. 6, SEQ. ID. No. 8, SEQ. ID. No. 10, SEQ. ID. No. 12, SEQ. ID. No. 14, SEQ. ID. No. 16, SEQ. ID. No. 19, SEQ. ID. No. 21, SEQ. ID. No. 23, SEQ. ID. No. 25, SEQ. ID. No. 27, SEQ. ID. No. 29, SEQ. ID. No. 31, SEQ. ID. No. 33, SEQ. ID. No. 35, SEQ. ID. No. 37, SEQ. ID. No. 39, SEQ. ID. No. 41, SEQ. ID. No. 43, SEQ. ID. No. 45, SEQ. ID. No. 47, SEQ. ID. No. 49, SEQ. ID. No. 51, SEQ. ID. No. 53, SEQ. ID. No. 55, SEQ. ID. No. 57, SEQ. ID. No. 59, SEQ. ID. No. 61, SEQ. ID. No. 63, or SEQ. ID. No. 65.

4. The nucleic acid molecule according to claim 1, wherein the
15 nucleic acid molecule hybridizes, under stringency conditions comprising a hybridization medium which includes 0.9M SSC at a temperature of 37°C, to a DNA molecule comprising a nucleic acid sequence complementary to SEQ. ID. No. 2, SEQ. ID. No. 4, SEQ. ID. No. 6, SEQ. ID. No. 8, SEQ. ID. No. 10, SEQ. ID. No. 12, SEQ. ID. No. 14, SEQ. ID. No. 16, SEQ. ID. No. 19, SEQ. ID. No. 21, SEQ. ID. No. 23, SEQ. ID. No. 25, SEQ. ID. No. 27, SEQ. ID. No. 29, SEQ. ID. No. 31, SEQ. ID. No. 33, SEQ. ID. No. 35, SEQ. ID. No. 37, SEQ. ID. No. 39, SEQ. ID. No. 41, SEQ. ID. No. 43, SEQ. ID. No. 45, SEQ. ID. No. 47, SEQ. ID. No. 49, SEQ. ID. No. 51, SEQ. ID. No. 53, SEQ. ID. No. 55, SEQ. ID. No. 57, SEQ. ID. No. 59, SEQ. ID. No. 61, SEQ. ID. No. 63, or SEQ. ID. No. 65; or

5. The nucleic acid molecule according to claim 1, wherein the
25 nucleic acid comprises a nucleotide sequence which is complementary to the nucleic acid molecules of (i) and (ii).

6. The nucleic acid molecule according to claim 1, wherein the
30 nucleic acid is DNA.

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7. An isolated protein or polypeptide encoded by the nucleic acid molecule according to claim 1.

8. The isolated protein or polypeptide according to claim 7,
5 wherein the protein or polypeptide comprises an amino acid sequence of SEQ. ID. No. 3, SEQ. ID. No. 5, SEQ. ID. No. 7, SEQ. ID. No. 9, SEQ. ID. No. 11, SEQ. ID. No. 13, SEQ. ID. No. 15, SEQ. ID. No. 17, SEQ. ID. No. 20, SEQ. ID. No. 22, SEQ. ID. No. 24, SEQ. ID. No. 26, SEQ. ID. No. 28, SEQ. ID. No. 30, SEQ. ID. No. 32, SEQ. ID. No. 34, SEQ. ID. No. 36, SEQ. ID. No. 38, SEQ. ID. No. 40, SEQ. ID. No. 42, SEQ. ID. No. 44, SEQ. ID. No. 46, SEQ. ID. No. 48, SEQ. ID. No. 50, SEQ. ID. No. 52, SEQ. ID. No. 54, SEQ. ID. No. 56, SEQ. ID. No. 58, SEQ. ID. No. 60, SEQ. ID. No. 62, SEQ. ID. No. 64, or SEQ. ID. No. 66.

9. A composition comprising:
15 a carrier and
a protein or polypeptide according to claim 7.

10. An expression system comprising a vector into which is inserted a heterologous DNA molecule according to claim 6.

11. The expression system according to claim 10, wherein the heterologous DNA molecule is inserted in sense orientation and correct reading frame.

12. A host cell comprising a heterologous DNA molecule according to claim 6.

13. The host cell according to claim 12, wherein the host cell is a bacterial cell or a plant cell.

14. The host cell according to claim 13, wherein the bacterial cell is *Agrobacterium*.

15. A transgenic plant comprising a heterologous DNA molecule according to claim 6.

5 16. The transgenic plant according to claim 15, wherein the transgenic plant comprises an R gene which recognizes the protein or polypeptide encoded by the heterologous DNA molecule.

10 17. The transgenic plant according to claim 15, wherein the transgenic plant supports growth of compatible nonpathogenic bacteria.

15 18. A method of making a transgenic plant cell comprising: providing a DNA molecule according to claim 6 and transforming a plant cell with the DNA molecule under conditions effective to yield transcription of the DNA molecule.

20 19. A method of making a transgenic plant comprising: transforming a plant cell with a DNA molecule according to claim 6 under conditions effective to yield transcription of the DNA molecule and regenerating a transgenic plant from the transformed plant cell.

25 20. A method of imparting disease resistance to a plant comprising transforming a plant cell with a heterologous DNA molecule of claim 6 and regenerating a transgenic plant from the transformed plant cell, wherein the transgenic plant expresses the heterologous DNA molecule under conditions effective to impart disease resistance.

30 21. The method according to claim 20, wherein the transgenic plant comprises an R gene which is activated by the protein or polypeptide encoded by the heterologous DNA molecule.

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22. A method of imparting disease resistance to a plant comprising:
treating a plant with an protein or polypeptide according to
claim 7 under conditions effective to impart disease resistance to the treated plant.

5 23. The method according to claim 22, wherein said treating is
carried out by applying the protein or polypeptide is isolated form.

24. The method according to claim 22, wherein said treating is
carried out by applying a non-pathogenic bacteria which secretes the protein or
10 polypeptide.

25. A method of making a plant hypersusceptible to colonization
by nonpathogenic bacteria, said method comprising:
transforming a plant cell with a heterologous DNA molecule of
15 claim 6 and
regenerating a transgenic plant from the transformed plant cell,
wherein the transgenic plant expresses the heterologous DNA molecule under
conditions effective to render the transgenic plant hypersusceptible to colonization by
nonpathogenic bacteria.

26. A method of making a plant hypersusceptible to colonization
by nonpathogenic bacteria, said method comprising:
treating a plant with an protein or polypeptide according to
claim 7 under conditions effective to render the treated plant susceptible to
25 colonization by nonpathogenic bacteria.

27. The method according to claim 26, wherein said treating is
carried out by applying the protein or polypeptide is isolated form.

30 28. The method according to claim 26, wherein said treating is
carried out by applying a non-pathogenic bacteria which secretes the protein or
polypeptide.

29. A method of causing eukaryotic cell death comprising:
introducing into a eukaryotic cell a cytotoxic *Pseudomonas*
protein, said introducing being performed under conditions effective to cause cell
death.

30. The method according to claim 29, wherein the cytotoxic
Pseudomonas protein is HopPsyA, HopPtoA, or HopPtoA2.

31. The method according to claim 29, wherein the eukaryotic cell
is *in vitro*.

32. The method according to claim 29, wherein the eukaryotic cell
is *in vivo*.

33. The method according to claim 29, wherein the eukaryotic cell
is a cancer cell.

34. A method of treating a cancerous condition comprising:
introducing a cytotoxic *Pseudomonas* protein into cancer cells
of a patient under conditions effective to cause death of cancer cells, thereby treating
the cancerous condition.

35. The method according to claim 34, wherein the cytotoxic
Pseudomonas protein is HopPsyA, HopPtoA, or HopPtoA2.

36. The method according to claim 34, wherein said introducing
comprises administering the cytotoxic *Pseudomonas* protein to the patient.

37. The method according to claim 35, wherein said introducing comprises administering to the patient a targeted DNA delivery system comprising a DNA molecule which encodes the cytotoxic *Pseudomonas* protein, wherein the targeted DNA delivery system delivers the DNA molecule into cancer cells and the
- 5 cytotoxic *Pseudomonas* protein is expressed in the cancer cells.

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